

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Highlight the similarities and differences based on structure, occurrence and biological roles of starch and glycogen.
 17. Classify amino acids based on their side chain composition and nutritional significance with examples.
 18. Elaborate the four levels of protein-structure with examples and their biological significance.
 19. Elucidate Bloor's classification of lipids with their chemical nature and biological roles.
 20. Analyse the types of RNA and their functions in protein synthesis.
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APRIL/MAY 2025

23UBC31 — BIOMOLECULES

Time : Three hours

Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. How mutarotation occurs in monosaccharide?
2. Define epimers. Give an example of two epimers in monosaccharides.
3. Name two modified amino acids found in proteins and state their functions.
4. Define isoelectric point and its significance.
5. What is salting in and salting out in relation to protein solubility?
6. Define ampholytes and explain their relevance to proteins.
7. Mention any two biological functions of phospholipids.

8. What are bile salts and how are they derived from cholesterol?
9. Define hypochromic and hyperchromic effects in DNA.
10. What is the difference between a nucleoside and a nucleotide?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Compare between stereo-isomerism and optical isomerism in carbohydrates with examples.

Or

- (b) Illustrate the formation of the cyclic structure of glucose from its linear form.

12. (a) Discuss the optical activity and its importance in biological systems of amino acids.

Or

- (b) "How do amino acids act as amphoteric compounds" Explain with reactions.

13. (a) Explain the process of denaturation and renaturation of proteins and the factors that influence these processes.

Or

- (b) Assess the importance of protein amphoteric behaviour and isoelectric point in biochemical applications.

14. (a) Brief on the significance of Reichert–Meissl number and saponification value in fat characterization.

Or

- (b) Write a short note on glycolipids with their structure and functions.

15. (a) Discuss the Watson and Crick double helical model of DNA and its significance.

Or

- (b) Differentiate between A-DNA, B-DNA and Z-DNA.

